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PATENT  
VIK01 P-331

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Examiner : Christopher S. Kim  
Applicants : James G. Retzliff and Scott T. Franson  
Serial No. : 09/809,454  
Filing Date : March 15, 2001  
Group : 3752  
For : IMPROVED COVER PLATE FOR CONCEALED SPRINKLER

Mail Stop Appeal Brief Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Dear Sir:

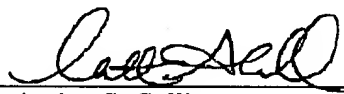
BRIEF ON APPEAL

Respectfully submitted,

JAMES G. RETZLOFF and  
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By: Van Dyke, Gardner, Linn & Burkhardt, LLP

April 19, 2004  
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Dear Sir:

BRIEF ON APPEAL

1. Real Party in Interest:

The real party in interest is The Viking Corporation.

2. Related Appeals and/or Interferences:

There are no related cases on appeal or in an interference proceeding.

3. Status of the Claims:

Claims 7, 8, 29, 30, 34-36, and 48-55 are pending in the application. Claims 29, 30, 34, 52, and 53 are allowed. Claims 7, 8, 35, 36, 48-51, 54, and 55, are rejected. The rejection of Claims 7, 8, 35, 36, 48-51, 54, and 55 are hereby appealed.

4. Status of the Amendments:

There has been an amendment filed subsequent to the final rejection; however, the amendment has not been entered. The amendment that was filed subsequent to the final

rejection is believed to place the case in condition for allowance on its face. Applicants contacted the Examiner in charge of the case in an effort to expedite allowance of the case in light of the amendment, but without success. Since the amendment has not been entered, Applicants, therefore, file this Appeal Brief.

5. Summary of the Invention:

The present invention relates to a cover plate for a concealed fire sprinkler head that provides a low-profile cover and permits heat to be directed to the thermally responsive trigger assembly and, further, is configured to be immediately and effectively dislodged from the housing of the concealed sprinkler head in response to a fire (see page 3, lines 1-11). Applicants' invention was developed to overcome the difficulties associated with conventional covers that have incorporated airway openings to permit the heat to pass through and impact the thermally sensitive trigger assembly of the concealed sprinkler but which diminish the cover plate's ability to perform its function—that is to provide an aesthetic cover that does not visually detract from the ceiling or sidewall in which the concealed sprinkler head is positioned.

In contrast, Applicants' cover includes at its periphery at least one air passageway section that is configured to enable heated air to pass through the gap or interstice formed between the air passageway and the flange of the concealed sprinkler head housing so that the heat can travel through to the thermally sensitive trigger assembly (see page 7, lines 9-13). One of the embodiments of the invention includes a cover with radially extending passageways that extend inwardly from the peripheral edge of the cover plate. Other embodiments include covers with one or more transverse passageways—that is one or more passageways that extend transversely to the central axis of the sprinkler head when the cover plate is mounted over the sprinkler head. In each embodiment, the cover plate covers and

conceals the sprinkler head and yet allows air to travel inwardly from the periphery of the cover plate to improve the responsiveness of the sprinkler head.

Claim 35 calls for:

A concealed sprinkler head comprising:  
a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;  
a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and  
a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

Claim 36 depends from Claim 35 and is directed to the cover plate having an annular perimeter portion comprising undulating outer surface forming a plurality of radially spaced undulations, where the undulations form the passageway sections.

Claim 51 depends from Claim 36 and, further, calls for the generally planar portions to extend between the passageway sections.

Claim 54 depends from Claim 35 and, further, calls for the other portions to comprise arcuate portions.

Claim 55 calls for:

A concealed sprinkler head comprising:  
a sprinkler head body having an outlet opening and a central axis, said outlet opening disposed about said central axis;

a housing mounted to said sprinkler head body and having a central passageway in communication with said outlet opening;

a thermally sensitive trigger assembly operative to open and close said outlet opening; and

a cover plate mounted to said housing, said cover plate having a generally planar central portion, a perimeter portion extending around said planar central portion, and a peripheral edge extending around said perimeter portion, said cover plate further including an inner surface facing said housing and an outer surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.

Claim 7 is dependent upon Claim 55 and is directed to a spring being positioned between the inner surface of the cover plate and the housing that is mounted to the sprinkler head body, which is configured to thrust the cover plate away from the housing.

Claim 8 is dependent upon Claim 7 and further calls for the spring to comprise a substantially linear section and a second substantially linear section joined by an arcuate section.

Claim 48 depends from Claim 55 and is directed to the cover plate having an undulating surface, which defines the plurality of radially spaced arcuate portions.

Claim 49 is dependent upon Claim 55 and is directed to the cover plate including a plurality of radially spaced generally planar portions extending inwardly from the perimeter edge [peripheral edge] of the cover plate and disposed between the radially spaced arcuate portions.

Claim 50 is dependent upon Claim 49 and, further, calls for the planar portions to extend inwardly from the peripheral edge to the central planar portion of the cover plate.

6. Issues:

1. Whether the finality of the rejection entered October 17, 2003, was proper.
2. Whether Claims 7, 35-36, 48-51, 54 and 55 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,105,076 to Simmons et al.
3. Whether Claim 8 is unpatentable under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,105,076 to Simmons et al.

7. Grouping of Claims:

Applicants regard Claim 36 as separately patentable from Claim 35. Applicants regard Claim 48 to be separately patentable from Claim 55. Applicants regard Claim 49 to be separately patentable from Claim 55. Applicants regard Claim 51 to be separately patentable from Claim 36. Applicant regards Claim 54 to be separately patentable from Claim 35. Claims 7 and 8 are grouped with Claim 55.

8. Argument:

1. Whether the finality of the rejection entered on October 17, 2003, was appropriate.

The MPEP states "[t]he claims of a new application may be finally rejected in the first Office action in those situations where (A) the new application is a continuing application of, or a substitute for, an earlier application, and (B) all claims of the new application (1) are drawn to the same invention claimed in the earlier application and (2) would have been properly finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application." (emphasis added).



A Request for Continued Examination (RCE) and a Petition for an Extension of Time in the present application was filed August 28, 2003, in response to a final Office Action entered April 28, 2003. Along with the Request, Applicants submitted an amendment that amended Claims 7, 29, 30, 35, 36, and 48-51 and entered new Claims 52-55. Claims 7, 29, 30, 35, 36, and 48-51 had been previously rejected over U.S. Patent No. 4,105,076 to Simmons et al. In response to the RCE and amendment, the Examiner entered a final Office Action dated October 17, 2003, rejecting Claims 7, 8, 35, 36, 48-51, 54, and 55 but allowing Claims 29, 30, 34, 52, and 53. The Examiner stated that finality of the Office Action of October 17, 2003, was predicated on the grounds that "[a]ll claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry of the 37 CFR 1.14."

Applicants respectfully note that the amendments submitted with the Request for Continued Examination included amendments that placed several of the claims in condition for allowance (Claims 29, 30, 34, 52, and 53), and which were allowed in the final Office Action. As noted above, these claims were previously rejected in the Office Action dated April 28, 2003. Specifically, Claim 29 was amended from:

29. (prior to RCE) A concealed sprinkler head comprising:
- a sprinkler body having a central orifice with an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;
  - a deflector movably mounted to said sprinkler body;
  - a sealing assembly for sealing said outlet;
  - a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;
  - a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and
  - a cover plate removably mounted to said bottom of said housing, said cover plate having a planar portion and a

periphery, wherein at least a section of said periphery projects outwardly from said planar portion away from said sprinkler body to thereby form at least one passageway section configured to enable air to travel between said passageway section and said bottom of said housing and towards said thermally sensitive trigger assembly.

to

29. (after RCE) A concealed sprinkler head comprising:
- a sprinkler body having a central axis and a central orifice disposed about said central axis, said central orifice defining with an inlet and an outlet, and said inlet configured for attachment to a fire extinguishing fluid supply line;
  - a deflector movably mounted to said sprinkler body;
  - a sealing assembly for sealing said outlet;
  - a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;
  - a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and
  - a cover plate removably mounted to said bottom of said housing, said cover plate having a planar central portion and a periphery extending around said central portion, said central portion having an outer surface lying in a plane generally orthogonal to said central axis, said plate further including arcuate portions extending inwardly from said periphery to said central portion, said arcuate portions projecting outwardly from said plane away from said sprinkler body in a direction generally along said central axis and forming a plurality of radially spaced and radially extending passageway sections having portions offset outwardly from said plane and in said direction and configured to enable air to travel between said periphery and said bottom of said housing and towards the thermally sensitive trigger assembly, wherein at least a section of said periphery projects outwardly from said planar portion away from said sprinkler body to thereby form at least one passageway section configured to enable air to travel between said passageway section and said bottom of said housing and towards said thermally sensitive trigger assembly.

These amendments resulted in the claim being allowed. Therefore, not all of the claims in the RCE would have been properly finally rejected on the grounds and art of record in the next Office Action if they had been entered in the application prior to the filing

of the RCE. Therefore, Applicants respectfully urge that the finality of the first Office Action after filing of the RCE was not proper. As a result of this improper final Office Action, Applicants have appealed Claims 7, 8, 35, 36, 48-51, 54, and 55 in order to have these claims considered on the merits. Furthermore, Applicants respectfully submit that Claims 7, 8, 35, 36, 48-51, 54, and 55 are not properly rejected based on the ground and art of record.

II. Whether Claims 7, 35, 36, 48-51, 54, and 55 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,105,076 to Simmons et al.

"A claim is anticipated if only each and every limitation as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). In addition, "the identical invention must be shown in as complete detail as is contained in the claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). All words in a claim must be considered in judging patentability of the claim against the prior art. *In re Fine*, 873 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494 (CCPA 1970).

Applicants respectfully submit that the Examiner has failed to establish that Claims 7, 35, 36, 48-51, 54, and 55 are anticipated by Simmons et al. Applicants respectfully urge that Simmons et al. do not disclose or suggest the claimed combinations.

For example, with reference to Claim 35 Claim 35 calls for:

A concealed sprinkler head comprising:  
a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;

a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and

a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

Applicants respectfully urge that Simmons et al. do not disclose or suggest a concealed sprinkler head cover plate with an outer surface having planar portions and other portions of the cover plate projecting outwardly away from the housing along the central axis of the sprinkler head body wherein the other portions form passageways that extend radially inward from the periphery to enable air to travel from the periphery of the cover plate inwardly to the thermally sensitive trigger assembly. In contrast, Simmons et al. discloses a cover plate with a flat or planar outer surface with no portions of the cover plate projecting outwardly away from the housing, as required by the claim.

In contrast, Simmons et al. discloses a cover plate with an inwardly extending rim with a series of tabs (44) that abut the ceiling. Therefore, Applicants respectfully urge that the Examiner has failed to establish that Simmons et al. anticipate the claimed invention.

Claims 7 and 8 are dependent upon Claim 35 and are considered allowed by virtue of their dependency on Claim 35.

Claim 36 is dependent upon Claim 35 and is similarly considered allowable by its virtue of its dependency. In addition, Claim 36 is further considered allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. Simmons et al. do not, for example, disclose or suggest a cover plate with an annular perimeter portion comprising an undulating outer surface forming a plurality of radially

spaced undulations, with the undulations forming the passageway sections. Therefore, Applicants respectfully urge that Claim 36 is, further, patentably distinguishable over Simmons et al.

Claim 51 is dependent upon Claim 36 and is considered allowable by virtue of its dependency on Claim 36 and its ultimate dependency on Claim 35. In addition, Claim 51 is considered allowable on its own merits and recites additional features of the invention neither taught nor suggest by Simmons et al. Simmons et al., for example, do not disclose or suggest the cover plate comprising generally planar portions extending between the passageway sections. Accordingly, Applicant respectfully urges that Claim 51 is further distinguishable and patentable over Simmons et al.

With respect to Claim 54, Claim 54 is dependent upon Claim 35 and is considered to be allowable by virtue of its dependency upon Claim 35. In addition, Claim 54 calls for the other portions to comprise arcuate portions. Simmons et al. do not disclose or suggest a cover plate including arcuate portions, with the arcuate portions forming passageway sections that extend inwardly from the periphery of the cover plate. Therefore, Applicants respectfully urge that Claim 54 is further patentably distinguishable over Simmons et al.

With respect to Claim 55, Claim 55 calls for:

A concealed sprinkler head comprising:  
a sprinkler head body having an outlet opening and  
a central axis, said outlet opening disposed about said central axis;  
a housing mounted to said sprinkler head body and  
having a central passageway in communication with said outlet  
opening;  
a thermally sensitive trigger assembly operative to  
open and close said outlet opening; and  
a cover plate mounted to said housing, said cover  
plate having a generally planar central portion, a perimeter portion  
extending around said planar central portion, and a peripheral edge  
extending around said perimeter portion, said cover plate further  
including an inner surface facing said housing and an outer

surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.

Applicants respectfully urge that Simmons et al. do not disclose or suggest, for example, a concealed sprinkler head that includes a cover plate having a generally planar central portion, a perimeter portion extending around the planar portion, and a peripheral edge extending around the perimeter portion, with the perimeter portion having a plurality of radially spaced arcuate portions extending between the central portion and the peripheral edge of the cover plate, which project outwardly from the plane of the cover plate to form a plurality of radially spaced passageways that extend inwardly from the peripheral edge to enable air to travel from the peripheral edge to the thermally sensitive trigger assembly. As noted above, in order to establish anticipation of a claim, each and every limitation of the claim must be either inherently or expressly disclosed in a single prior art reference. Moreover, all words in a claim must be considered in judging patentability of a claim against the prior art. *In re Fine*, 873 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Therefore, Applicants respectfully urge that Claim 55 is patentably distinguishable over Simmons et al.

Claim 48 is dependent upon Claim 55 and is considered allowable by virtue of its dependency on Claim 55. In addition, Claim 48 is considered to be allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. For example, Claim 48 further calls for the cover plate to include an undulating surface, which undulating surface defines the plurality of radially spaced arcuate portions. Simmons et al. do not disclose or suggest a concealed sprinkler head cover plate with an undulating surface that defines radially spaced arcuate portions that define radially spaced passageways

that extend inwardly from the peripheral edge to enable air to travel from the peripheral edge of the cover plate toward the thermally sensitive trigger assembly. In contrast, Simmons et al. discloses a planar cover plate with an inwardly extending rim with spaced rectangular tabs for bearing against the ceiling in which the concealed sprinkler is positioned. Therefore, Applicants respectfully urge that Claim 48 is patentably distinguishable over Simmons et al.

Claim 49 is considered allowable by virtue of its dependency upon Claim 55.

In addition, Claim 49 is considered allowable on its own merits since it recites further features of the invention neither taught nor suggested by the Simmons et al. reference. For example, Claim 49 calls for a plurality of radially spaced generally planar portions that extend inwardly from the perimeter [peripheral] edge of the cover plate and are disposed between the radially spaced arcuate portions. Applicants respectfully urge that this feature is neither taught nor suggested by Simmons et al. As noted above, Simmons et al. is directed to a planar cover plate—moreover, a cover plate without any arcuate portions that define passageways extending inwardly from the peripheral edge to enable air to travel from the peripheral edge toward the thermally sensitive trigger assembly of the concealed sprinkler.

Claim 50 is considered allowable by virtue of its dependency on Claim 49 and its ultimate dependency upon Claim 55. In addition, Claim 50 is further considered allowable on its own merits since it recites other features of the invention neither taught nor suggested by the applied reference. For example, Claim 50 further calls for the planar portions to extend inwardly from the peripheral edge of the cover plate to a central planar portion. Applicants respectfully urge that Simmons et al. do not disclose or suggest a cover plate with planar portions disposed between radially spaced arcuate portions that extend between a central planar portion and a peripheral edge of the cover plate, as required by the claim. Therefore, Applicants urge that Claim 50 is further patentably distinguishable over Simmons et al.

Claim 51 is dependent upon Claim 36 and is considered to be allowable by virtue of its dependency on Claim 36. In addition, Claim 51 is considered to be allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. For example, Simmons et al. do not disclose generally planar portions extending between passageway sections, which are formed by a plurality of radially spaced undulations that project outwardly away from a concealed sprinkler housing. Therefore, Applicants respectfully urge that Claim 51 is further patentably distinguishable over Simmons et al.

With respect to Claim 54, Claim 54 is dependent upon Claim 35 and is considered to be allowable by virtue of its dependency upon Claim 35. In addition, Claim 54 is further considered to be allowable on its own merits since it recites other features not taught nor suggested by Simmons et al. Claim 54 further calls for the other portions to comprise arcuate portions. As noted above, Applicants respectfully urge that Simmons et al. do not disclose or suggest a cover plate with arcuate portions that form passageways that extend from the periphery of the cover plate inwardly and project outwardly away from the concealed sprinkler head housing.

III. Whether Claim 8 is unpatentable over 35 U.S.C. § 103(a)  
as being obvious over U.S. Patent No. 4,105,076 to Simmons et al.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference or references when combined must teach or suggest all the claimed limitations. The teaching or suggestion to make the claim combination and reasonable expectation of success must both be found in the prior art and



not based on Applicants' disclosure. *In re Vaack*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). See also MPEP § 2143.

Claim 8 is dependent upon Claim 7 and ultimately dependent upon Claim 55 and, thus, incorporates the same limitations as Claims 7 and 55. Claim 8 is considered to be allowable by virtue of its dependency to Claim 55; therefore, Applicants respectfully urge that Claim 8 is patentably distinguishable over Simmons et al. for at least the reasons set forth above in reference to Claim 55.

9. Conclusion:

For the reasons advanced above, Applicants respectfully contend that the finality of the Office Action dated October 17, 2003 was improper and, further, that each of the appealed claims is patentable over the Simmons et al. reference. Therefore, reversal of all rejections of the appealed claims is respectfully solicited. To the extent necessary, a Petition for an Extension of Time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in the fees in connection with the filing of this paper, including for example extension fees, to Deposit Account No. 22-0190 and please credit any excess fees to such deposit account.

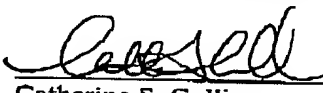
Respectfully submitted,

JAMES G. RETZLOFF and  
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## APPENDIX A - REJECTED CLAIMS

Claims 7, 8, 35, 36, 48-51, 54, and 55.

7. (previously presented) The concealed sprinkler head of claim 55, further comprising a spring positioned between said inner surface and said housing, said spring configured to thrust said cover plate away from said housing.
8. (original) The concealed sprinkler head of claim 7, wherein said spring further comprises a first substantially linear section and a second substantially linear section joined by an arcuate section.
35. (previously presented: A concealed sprinkler head comprising:  
a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;  
a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and  
a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.
36. (previously presented) The concealed sprinkler head of claim 35, wherein said cover plate has an annular perimeter portion comprising an undulating outer surface forming a plurality of radially spaced undulations, and said undulations forming said passageway sections.

48. (previously presented) The concealed sprinkler head according to Claim 53, wherein said cover plate has an undulating surface, said undulating surface defining said plurality of radially spaced arcuate portions.
49. (previously presented) The concealed sprinkler head according to Claim 55, further comprising a plurality of radially spaced generally planar portions extending inwardly from said perimeter edge and disposed between said radially spaced arcuate portions.
50. (previously presented) The concealed sprinkler head according to Claim 49, wherein said planar portions extend inwardly from said peripheral edge to said central planar portion.
51. (previously presented) The concealed sprinkler head according to Claim 36, further comprising generally planar portions extending between said passageway sections.
54. (previously presented) The concealed sprinkler head according to Claim 35, wherein said other portions comprise arcuate portions.
55. (previously presented) A concealed sprinkler head comprising:
- a sprinkler head body having an outlet opening and a central axis, said outlet opening disposed about said central axis;
  - a housing mounted to said sprinkler head body and having a central passageway in communication with said outlet opening;
  - a thermally sensitive trigger assembly operative to open and close said outlet opening; and
  - a cover plate mounted to said housing, said cover plate having a generally planar central portion, a perimeter portion extending around said planar central portion, and a peripheral edge extending around said perimeter portion, said cover plate further including an inner surface facing said housing and an outer surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially

spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE  
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Examiner : Christopher S. Kim  
Applicants : James G. Retzlaff and Scott T. Franson  
Serial No. : 09/809,454  
Filing Date : March 15, 2001  
Group : 3752  
For : IMPROVED COVER PLATE FOR CONCEALED SPRINKLER

Mail Stop Appeal Brief Patents  
Commissioner for Patents  
P.O. Box 1450  
Alexandria VA 22313-1450

Dear Sir:

BRIEF ON APPEAL

1. Real Party in Interest:

The real party in interest is The Viking Corporation.

2. Related Appeals and/or Interferences:

There are no related cases on appeal or in an interference proceeding.

3. Status of the Claims:

Claims 7, 8, 29, 30, 34-36, and 48-55 are pending in the application. Claims 29, 30, 34, 52, and 53 are allowed. Claims 7, 8, 35, 36, 48-51, 54, and 55, are rejected. The rejection of Claims 7, 8, 35, 36, 48-51, 54, and 55 are hereby appealed.

4. Status of the Amendments:

There has been an amendment filed subsequent to the final rejection; however, the amendment has not been entered. The amendment that was filed subsequent to the final



rejection is believed to place the case in condition for allowance on its face. Applicants contacted the Examiner in charge of the case in an effort to expedite allowance of the case in light of the amendment, but without success. Since the amendment has not been entered, Applicants, therefore, file this Appeal Brief.

5. Summary of the Invention:

The present invention relates to a cover plate for a concealed fire sprinkler head that provides a low-profile cover and permits heat to be directed to the thermally responsive trigger assembly and, further, is configured to be immediately and effectively dislodged from the housing of the concealed sprinkler head in response to a fire (see page 3, lines 1-11). Applicants' invention was developed to overcome the difficulties associated with conventional covers that have incorporated airway openings to permit the heat to pass through and impact the thermally sensitive trigger assembly of the concealed sprinkler but which diminish the cover plate's ability to perform its function—that is to provide an aesthetic cover that does not visually detract from the ceiling or sidewall in which the concealed sprinkler head is positioned.

In contrast, Applicants' cover includes at its periphery at least one air passageway section that is configured to enable heated air to pass through the gap or interstice formed between the air passageway and the flange of the concealed sprinkler head housing so that the heat can travel through to the thermally sensitive trigger assembly (see page 7, lines 9-13). One of the embodiments of the invention includes a cover with radially extending passageways that extend inwardly from the peripheral edge of the cover plate. Other embodiments include covers with one or more transverse passageways—that is one or more passageways that extend transversely to the central axis of the sprinkler head when the cover plate is mounted over the sprinkler head. In each embodiment, the cover plate covers and

conceals the sprinkler head and yet allows air to travel inwardly from the periphery of the cover plate to improve the responsiveness of the sprinkler head.

Claim 35 calls for:

A concealed sprinkler head comprising:  
a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;  
a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and  
a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

Claim 36 depends from Claim 35 and is directed to the cover plate having an annular perimeter portion comprising undulating outer surface forming a plurality of radially spaced undulations, where the undulations form the passageway sections.

Claim 51 depends from Claim 36 and, further, calls for the generally planar portions to extend between the passageway sections.

Claim 54 depends from Claim 35 and, further, calls for the other portions to comprise arcuate portions.

Claim 55 calls for:

A concealed sprinkler head comprising:  
a sprinkler head body having an outlet opening and a central axis, said outlet opening disposed about said central axis;

a housing mounted to said sprinkler head body and having a central passageway in communication with said outlet opening;

a thermally sensitive trigger assembly operative to open and close said outlet opening; and

a cover plate mounted to said housing, said cover plate having a generally planar central portion, a perimeter portion extending around said planar central portion, and a peripheral edge extending around said perimeter portion, said cover plate further including an inner surface facing said housing and an outer surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.

Claim 7 is dependent upon Claim 55 and is directed to a spring being positioned between the inner surface of the cover plate and the housing that is mounted to the sprinkler head body, which is configured to thrust the cover plate away from the housing.

Claim 8 is dependent upon Claim 7 and further calls for the spring to comprise a substantially linear section and a second substantially linear section joined by an arcuate section.

Claim 48 depends from Claim 55 and is directed to the cover plate having an undulating surface, which defines the plurality of radially spaced arcuate portions.

Claim 49 is dependent upon Claim 55 and is directed to the cover plate including a plurality of radially spaced generally planar portions extending inwardly from the perimeter edge [peripheral edge] of the cover plate and disposed between the radially spaced arcuate portions.

Claim 50 is dependent upon Claim 49 and, further, calls for the planar portions to extend inwardly from the peripheral edge to the central planar portion of the cover plate.

6. Issues:

1. Whether the finality of the rejection entered October 17, 2003, was proper.
2. Whether Claims 7, 35-36, 48-51, 54 and 55 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,105,076 to Simmons et al.
3. Whether Claim 8 is unpatentable under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,105,076 to Simmons et al.

7. Grouping of Claims:

Applicants regard Claim 36 as separately patentable from Claim 35. Applicants regard Claim 48 to be separately patentable from Claim 55. Applicants regard Claim 49 to be separately patentable from Claim 55. Applicants regard Claim 51 to be separately patentable from Claim 36. Applicant regards Claim 54 to be separately patentable from Claim 35. Claims 7 and 8 are grouped with Claim 55.

8. Argument:

I. Whether the finality of the rejection entered on October 17, 2003, was appropriate.

The MPEP states "[t]he claims of a new application may be finally rejected in the first Office action in those situations where (A) the new application is a continuing application of, or a substitute for, an earlier application, and (B) all claims of the new application (1) are drawn to the same invention claimed in the earlier application and (2) would have been properly finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application." (emphasis added).

A Request for Continued Examination (RCE) and a Petition for an Extension of Time in the present application was filed August 28, 2003, in response to a final Office Action entered April 28, 2003. Along with the Request, Applicants submitted an amendment that amended Claims 7, 29, 30, 35, 36, and 48-51 and entered new Claims 52-55. Claims 7, 29, 30, 35, 36, and 48-51 had been previously rejected over U.S. Patent No. 4,105,076 to Simmons et al. In response to the RCE and amendment, the Examiner entered a final Office Action dated October 17, 2003, rejecting Claims 7, 8, 35, 36, 48-51, 54, and 55 but allowing Claims 29, 30, 34, 52, and 53. The Examiner stated that finality of the Office Action of October 17, 2003, was predicated on the grounds that "[a]ll claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry of the 37 CFR 1.14."

Applicants respectfully note that the amendments submitted with the Request for Continued Examination included amendments that placed several of the claims in condition for allowance (Claims 29, 30, 34, 52, and 53), and which were allowed in the final Office Action. As noted above, these claims were previously rejected in the Office Action dated April 28, 2003. Specifically, Claim 29 was amended from:

29. (prior to RCE) A concealed sprinkler head comprising:  
a sprinkler body having a central orifice with an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;  
a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and  
a cover plate removably mounted to said bottom of said housing, said cover plate having a planar portion and a

periphery, wherein at least a section of said periphery projects outwardly from said planar portion away from said sprinkler body to thereby form at least one passageway section configured to enable air to travel between said passageway section and said bottom of said housing and towards said thermally sensitive trigger assembly.

to

29. (after RCE) A concealed sprinkler head comprising:  
a sprinkler body having a central axis and a central orifice disposed about said central axis, said central orifice defining with an inlet and an outlet, and said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;  
a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and  
a cover plate removably mounted to said bottom of said housing, said cover plate having a planar central portion and a periphery extending around said central portion, said central portion having an outer surface lying in a plane generally orthogonal to said central axis, said plate further including arcuate portions extending inwardly from said periphery to said central portion, said arcuate portions projecting outwardly from said plane away from said sprinkler body in a direction generally along said central axis and forming a plurality of radially spaced and radially extending passageway sections having portions offset outwardly from said plane and in said direction and configured to enable air to travel between said periphery and said bottom of said housing and towards the thermally sensitive trigger assembly, wherein at least a section of said periphery projects outwardly from said planar portion away from said sprinkler body to thereby form at least one passageway section configured to enable air to travel between said passageway section and said bottom of said housing and towards said thermally sensitive trigger assembly.

These amendments resulted in the claim being allowed. Therefore, not all of the claims in the RCE would have been properly finally rejected on the grounds and art of record in the next Office Action if they had been entered in the application prior to the filing

of the RCE. Therefore, Applicants respectfully urge that the finality of the first Office Action after filing of the RCE was not proper. As a result of this improper final Office Action, Applicants have appealed Claims 7, 8, 35, 36, 48-51, 54, and 55 in order to have these claims considered on the merits. Furthermore, Applicants respectfully submit that Claims 7, 8, 35, 36, 48-51, 54, and 55 are not properly rejected based on the ground and art of record.

II. Whether Claims 7, 35, 36, 48-51, 54, and 55 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,105,076 to Simmons et al.

"A claim is anticipated if only each and every limitation as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). In addition, "the identical invention must be shown in as complete detail as is contained in the claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). All words in a claim must be considered in judging patentability of the claim against the prior art. *In re Fine*, 873 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494 (CCPA 1970).

Applicants respectfully submit that the Examiner has failed to establish that Claims 7, 35, 36, 48-51, 54, and 55 are anticipated by Simmons et al. Applicants respectfully urge that Simmons et al. do not disclose or suggest the claimed combinations.

For example, with reference to Claim 35 Claim 35 calls for:

A concealed sprinkler head comprising:  
a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;

a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and

a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

Applicants respectfully urge that Simmons et al. do not disclose or suggest a concealed sprinkler head cover plate with an outer surface having planar portions and other portions of the cover plate projecting outwardly away from the housing along the central axis of the sprinkler head body wherein the other portions form passageways that extend radially inward from the periphery to enable air to travel from the periphery of the cover plate inwardly to the thermally sensitive trigger assembly. In contrast, Simmons et al. discloses a cover plate with a flat or planar outer surface with no portions of the cover plate projecting outwardly away from the housing, as required by the claim.

In contrast, Simmons et al. discloses a cover plate with an inwardly extending rim with a series of tabs (44) that abut the ceiling. Therefore, Applicants respectfully urge that the Examiner has failed to establish that Simmons et al. anticipate the claimed invention.

Claims 7 and 8 are dependent upon Claim 35 and are considered allowed by virtue of their dependency on Claim 35.

Claim 36 is dependent upon Claim 35 and is similarly considered allowable by its virtue of its dependency. In addition, Claim 36 is further considered allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. Simmons et al. do not, for example, disclose or suggest a cover plate with an annular perimeter portion comprising an undulating outer surface forming a plurality of radially



spaced undulations, with the undulations forming the passageway sections. Therefore, Applicants respectfully urge that Claim 36 is, further, patentably distinguishable over Simmons et al.

Claim 51 is dependent upon Claim 36 and is considered allowable by virtue of its dependency on Claim 36 and its ultimate dependency on Claim 35. In addition, Claim 51 is considered allowable on its own merits and recites additional features of the invention neither taught nor suggest by Simmons et al. Simmons et al., for example, do not disclose or suggest the cover plate comprising generally planar portions extending between the passageway sections. Accordingly, Applicant respectfully urges that Claim 51 is further distinguishable and patentable over Simmons et al.

With respect to Claim 54, Claim 54 is dependent upon Claim 35 and is considered to be allowable by virtue of its dependency upon Claim 35. In addition, Claim 54 calls for the other portions to comprise arcuate portions. Simmons et al. do not disclose or suggest a cover plate including arcuate portions, with the arcuate portions forming passageway sections that extend inwardly from the periphery of the cover plate. Therefore, Applicants respectfully urge that Claim 54 is further patentably distinguishable over Simmons et al.

With respect to Claim 55, Claim 55 calls for:

A concealed sprinkler head comprising:  
a sprinkler head body having an outlet opening and  
a central axis, said outlet opening disposed about said central axis;  
a housing mounted to said sprinkler head body and  
having a central passageway in communication with said outlet  
opening;  
a thermally sensitive trigger assembly operative to  
open and close said outlet opening; and  
a cover plate mounted to said housing, said cover  
plate having a generally planar central portion, a perimeter portion  
extending around said planar central portion, and a peripheral edge  
extending around said perimeter portion, said cover plate further  
including an inner surface facing said housing and an outer

surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.

Applicants respectfully urge that Simmons et al. do not disclose or suggest, for example, a concealed sprinkler head that includes a cover plate having a generally planar central portion, a perimeter portion extending around the planar portion, and a peripheral edge extending around the perimeter portion, with the perimeter portion having a plurality of radially spaced arcuate portions extending between the central portion and the peripheral edge of the cover plate, which project outwardly from the plane of the cover plate to form a plurality of radially spaced passageways that extend inwardly from the peripheral edge to enable air to travel from the peripheral edge to the thermally sensitive trigger assembly. As noted above, in order to establish anticipation of a claim, each and every limitation of the claim must be either inherently or expressly disclosed in a single prior art reference. Moreover, all words in a claim must be considered in judging patentability of a claim against the prior art. *In re Fine*, 873 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Therefore, Applicants respectfully urge that Claim 55 is patentably distinguishable over Simmons et al.

Claim 48 is dependent upon Claim 55 and is considered allowable by virtue of its dependency on Claim 55. In addition, Claim 48 is considered to be allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. For example, Claim 48 further calls for the cover plate to include an undulating surface, which undulating surface defines the plurality of radially spaced arcuate portions. Simmons et al. do not disclose or suggest a concealed sprinkler head cover plate with an undulating surface that defines radially spaced arcuate portions that define radially spaced passageways

that extend inwardly from the peripheral edge to enable air to travel from the peripheral edge of the cover plate toward the thermally sensitive trigger assembly. In contrast, Simmons et al. discloses a planar cover plate with an inwardly extending rim with spaced rectangular tabs for bearing against the ceiling in which the concealed sprinkler is positioned. Therefore, Applicants respectfully urge that Claim 48 is patentably distinguishable over Simmons et al.

Claim 49 is considered allowable by virtue of its dependency upon Claim 55. In addition, Claim 49 is considered allowable on its own merits since it recites further features of the invention neither taught nor suggested by the Simmons et al. reference. For example, Claim 49 calls for a plurality of radially spaced generally planar portions that extend inwardly from the perimeter [peripheral] edge of the cover plate and are disposed between the radially spaced arcuate portions. Applicants respectfully urge that this feature is neither taught nor suggested by Simmons et al. As noted above, Simmons et al. is directed to a planar cover plate—moreover, a cover plate without any arcuate portions that define passageways extending inwardly from the peripheral edge to enable air to travel from the peripheral edge toward the thermally sensitive trigger assembly of the concealed sprinkler.

Claim 50 is considered allowable by virtue of its dependency on Claim 49 and its ultimate dependency upon Claim 55. In addition, Claim 50 is further considered allowable on its own merits since it recites other features of the invention neither taught nor suggested by the applied reference. For example, Claim 50 further calls for the planar portions to extend inwardly from the peripheral edge of the cover plate to a central planar portion. Applicants respectfully urge that Simmons et al. do not disclose or suggest a cover plate with planar portions disposed between radially spaced arcuate portions that extend between a central planar portion and a peripheral edge of the cover plate, as required by the claim. Therefore, Applicants urge that Claim 50 is further patentably distinguishable over Simmons et al.

Claim 51 is dependent upon Claim 36 and is considered to be allowable by virtue of its dependency on Claim 36. In addition, Claim 51 is considered to be allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. For example, Simmons et al. do not disclose generally planar portions extending between passageway sections, which are formed by a plurality of radially spaced undulations that project outwardly away from a concealed sprinkler housing. Therefore, Applicants respectfully urge that Claim 51 is further patentably distinguishable over Simmons et al.

With respect to Claim 54, Claim 54 is dependent upon Claim 35 and is considered to be allowable by virtue of its dependency upon Claim 35. In addition, Claim 54 is further considered to be allowable on its own merits since it recites other features not taught nor suggested by Simmons et al. Claim 54 further calls for the other portions to comprise arcuate portions. As noted above, Applicants respectfully urge that Simmons et al. do not disclose or suggest a cover plate with arcuate portions that form passageways that extend from the periphery of the cover plate inwardly and project outwardly away from the concealed sprinkler head housing.

III. Whether Claim 8 is unpatentable over 35 U.S.C. § 103(a)  
as being obvious over U.S. Patent No. 4,105,076 to Simmons et al.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference or references when combined must teach or suggest all the claimed limitations. The teaching or suggestion to make the claim combination and reasonable expectation of success must both be found in the prior art and

not based on Applicants' disclosure. *In re Vaack*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). See also MPEP § 2143.

Claim 8 is dependent upon Claim 7 and ultimately dependent upon Claim 55 and, thus, incorporates the same limitations as Claims 7 and 55. Claim 8 is considered to be allowable by virtue of its dependency to Claim 55; therefore, Applicants respectfully urge that Claim 8 is patentably distinguishable over Simmons et al. for at least the reasons set forth above in reference to Claim 55.

9. Conclusion:

For the reasons advanced above, Applicants respectfully contend that the finality of the Office Action dated October 17, 2003 was improper and, further, that each of the appealed claims is patentable over the Simmons et al. reference. Therefore, reversal of all rejections of the appealed claims is respectfully solicited. To the extent necessary, a Petition for an Extension of Time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in the fees in connection with the filing of this paper, including for example extension fees, to Deposit Account No. 22-0190 and please credit any excess fees to such deposit account.


Respectfully submitted,

JAMES G. RETZLOFF and  
SCOTT T. FRANSON

By: Van Dyke, Gardner, Linn & Burkhardt, LLP

April 19, 2004  
Date

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## APPENDIX A - REJECTED CLAIMS

Claims 7, 8, 35, 36, 48-51, 54, and 55.

7. (previously presented) The concealed sprinkler head of claim 55, further comprising a spring positioned between said inner surface and said housing, said spring configured to thrust said cover plate away from said housing.

8. (original) The concealed sprinkler head of claim 7, wherein said spring further comprises a first substantially linear section and a second substantially linear section joined by an arcuate section.

35. (previously presented: A concealed sprinkler head comprising:

- a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;

- a deflector movably mounted to said sprinkler body;

- a sealing assembly for sealing said outlet;

- a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;

- a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and

- a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

36. (previously presented) The concealed sprinkler head of claim 35, wherein said cover plate has an annular perimeter portion comprising an undulating outer surface forming a plurality of radially spaced undulations, and said undulations forming said passageway sections.

48. (previously presented) The concealed sprinkler head according to Claim 55, wherein said cover plate has an undulating surface, said undulating surface defining said plurality of radially spaced arcuate portions.

49. (previously presented) The concealed sprinkler head according to Claim 55, further comprising a plurality of radially spaced generally planar portions extending inwardly from said perimeter edge and disposed between said radially spaced arcuate portions.

50. (previously presented) The concealed sprinkler head according to Claim 49, wherein said planar portions extend inwardly from said peripheral edge to said central planar portion.

51. (previously presented) The concealed sprinkler head according to Claim 36, further comprising generally planar portions extending between said passageway sections.

54. (previously presented) The concealed sprinkler head according to Claim 35, wherein said other portions comprise arcuate portions.

55. (previously presented) A concealed sprinkler head comprising:

- a sprinkler head body having an outlet opening and a central axis, said outlet opening disposed about said central axis;

- a housing mounted to said sprinkler head body and having a central passageway in communication with said outlet opening;

- a thermally sensitive trigger assembly operative to open and close said outlet opening; and

- a cover plate mounted to said housing, said cover plate having a generally planar central portion, a perimeter portion extending around said planar central portion, and a peripheral edge extending around said perimeter portion, said cover plate further including an inner surface facing said housing and an outer surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially

spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.



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PATENT  
VIK01 P-331

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Dear Sir:

BRIEF ON APPEAL


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APR 19 2004

Respectfully submitted,

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SCOTT T. FRANSON

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INTERFERENCES

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rejection is believed to place the case in condition for allowance on its face. Applicants contacted the Examiner in charge of the case in an effort to expedite allowance of the case in light of the amendment, but without success. Since the amendment has not been entered, Applicants, therefore, file this Appeal Brief.

5. Summary of the Invention:

The present invention relates to a cover plate for a concealed fire sprinkler head that provides a low-profile cover and permits heat to be directed to the thermally responsive trigger assembly and, further, is configured to be immediately and effectively dislodged from the housing of the concealed sprinkler head in response to a fire (see page 3, lines 1-11). Applicants' invention was developed to overcome the difficulties associated with conventional covers that have incorporated airway openings to permit the heat to pass through and impact the thermally sensitive trigger assembly of the concealed sprinkler but which diminish the cover plate's ability to perform its function—that is to provide an aesthetic cover that does not visually detract from the ceiling or sidewall in which the concealed sprinkler head is positioned.

In contrast, Applicants' cover includes at its periphery at least one air passageway section that is configured to enable heated air to pass through the gap or interstice formed between the air passageway and the flange of the concealed sprinkler head housing so that the heat can travel through to the thermally sensitive trigger assembly (see page 7, lines 9-13). One of the embodiments of the invention includes a cover with radially extending passageways that extend inwardly from the peripheral edge of the cover plate. Other embodiments include covers with one or more transverse passageways—that is one or more passageways that extend transversely to the central axis of the sprinkler head when the cover plate is mounted over the sprinkler head. In each embodiment, the cover plate covers and

conceals the sprinkler head and yet allows air to travel inwardly from the periphery of the cover plate to improve the responsiveness of the sprinkler head.

Claim 35 calls for:

A concealed sprinkler head comprising:  
a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;  
a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and  
a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

Claim 36 depends from Claim 35 and is directed to the cover plate having an annular perimeter portion comprising undulating outer surface forming a plurality of radially spaced undulations, where the undulations form the passageway sections.

Claim 51 depends from Claim 36 and, further, calls for the generally planar portions to extend between the passageway sections.

Claim 54 depends from Claim 35 and, further, calls for the other portions to comprise arcuate portions.

Claim 55 calls for:

A concealed sprinkler head comprising:  
a sprinkler head body having an outlet opening and a central axis, said outlet opening disposed about said central axis;

a housing mounted to said sprinkler head body and having a central passageway in communication with said outlet opening;

a thermally sensitive trigger assembly operative to open and close said outlet opening; and

a cover plate mounted to said housing, said cover plate having a generally planar central portion, a perimeter portion extending around said planar central portion, and a peripheral edge extending around said perimeter portion, said cover plate further including an inner surface facing said housing and an outer surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.

Claim 7 is dependent upon Claim 55 and is directed to a spring being positioned between the inner surface of the cover plate and the housing that is mounted to the sprinkler head body, which is configured to thrust the cover plate away from the housing.

Claim 8 is dependent upon Claim 7 and further calls for the spring to comprise a substantially linear section and a second substantially linear section joined by an arcuate section.

Claim 48 depends from Claim 55 and is directed to the cover plate having an undulating surface, which defines the plurality of radially spaced arcuate portions.

Claim 49 is dependent upon Claim 55 and is directed to the cover plate including a plurality of radially spaced generally planar portions extending inwardly from the perimeter edge [peripheral edge] of the cover plate and disposed between the radially spaced arcuate portions.

Claim 50 is dependent upon Claim 49 and, further, calls for the planar portions to extend inwardly from the peripheral edge to the central planar portion of the cover plate.

6. Issues:

1. Whether the finality of the rejection entered October 17, 2003, was proper.
2. Whether Claims 7, 35-36, 48-51, 54 and 55 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,105,076 to Simmons et al.
3. Whether Claim 8 is unpatentable under 35 U.S.C. § 103(a) as being obvious over U.S. Patent No. 4,105,076 to Simmons et al.

7. Grouping of Claims:

Applicants regard Claim 36 as separately patentable from Claim 35. Applicants regard Claim 48 to be separately patentable from Claim 55. Applicants regard Claim 49 to be separately patentable from Claim 55. Applicants regard Claim 51 to be separately patentable from Claim 36. Applicant regards Claim 54 to be separately patentable from Claim 35. Claims 7 and 8 are grouped with Claim 55.

8. Argument:

I. Whether the finality of the rejection entered on October 17, 2003, was appropriate.

The MPEP states "[t]he claims of a new application may be finally rejected in the first Office action in those situations where (A) the new application is a continuing application of, or a substitute for, an earlier application, and (B) all claims of the new application (1) are drawn to the same invention claimed in the earlier application and (2) would have been properly finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application." (emphasis added).



A Request for Continued Examination (RCE) and a Petition for an Extension of Time in the present application was filed August 28, 2003, in response to a final Office Action entered April 28, 2003. Along with the Request, Applicants submitted an amendment that amended Claims 7, 29, 30, 35, 36, and 48-51 and entered new Claims 52-55. Claims 7, 29, 30, 35, 36, and 48-51 had been previously rejected over U.S. Patent No. 4,105,076 to Simmons et al. In response to the RCE and amendment, the Examiner entered a final Office Action dated October 17, 2003, rejecting Claims 7, 8, 35, 36, 48-51, 54, and 55 but allowing Claims 29, 30, 34, 52, and 53. The Examiner stated that finality of the Office Action of October 17, 2003, was predicated on the grounds that "[a]ll claims are drawn to the same invention claimed in the application prior to the entry of the submission under 37 CFR 1.114 and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the application prior to entry of the 37 CFR 1.14."

Applicants respectfully note that the amendments submitted with the Request for Continued Examination included amendments that placed several of the claims in condition for allowance (Claims 29, 30, 34, 52, and 53), and which were allowed in the final Office Action. As noted above, these claims were previously rejected in the Office Action dated April 28, 2003. Specifically, Claim 29 was amended from:

29. (prior to RCE) A concealed sprinkler head comprising:
- a sprinkler body having a central orifice with an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;
  - a deflector movably mounted to said sprinkler body;
  - a sealing assembly for sealing said outlet;
  - a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;
  - a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and
  - a cover plate removably mounted to said bottom of said housing, said cover plate having a planar portion and a

periphery, wherein at least a section of said periphery projects outwardly from said planar portion away from said sprinkler body to thereby form at least one passageway section configured to enable air to travel between said passageway section and said bottom of said housing and towards said thermally sensitive trigger assembly.

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29. (after RCE) A concealed sprinkler head comprising:  
a sprinkler body having a central axis and a central orifice disposed about said central axis, said central orifice defining with an inlet and an outlet, and said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;  
a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and  
a cover plate removably mounted to said bottom of said housing, said cover plate having a planar central portion and a periphery extending around said central portion, said central portion having an outer surface lying in a plane generally orthogonal to said central axis, said plate further including arcuate portions extending inwardly from said periphery to said central portion, said arcuate portions projecting outwardly from said plane away from said sprinkler body in a direction generally along said central axis and forming a plurality of radially spaced and radially extending passageway sections having portions offset outwardly from said plane and in said direction and configured to enable air to travel between said periphery and said bottom of said housing and towards the thermally sensitive trigger assembly, wherein at least a section of said periphery projects outwardly from said planar portion away from said sprinkler body to thereby form at least one passageway section configured to enable air to travel between said passageway section and said bottom of said housing and towards said thermally sensitive trigger assembly.

These amendments resulted in the claim being allowed. Therefore, not all of the claims in the RCE would have been properly finally rejected on the grounds and art of record in the next Office Action if they had been entered in the application prior to the filing

of the RCE. Therefore, Applicants respectfully urge that the finality of the first Office Action after filing of the RCE was not proper. As a result of this improper final Office Action, Applicants have appealed Claims 7, 8, 35, 36, 48-51, 54, and 55 in order to have these claims considered on the merits. Furthermore, Applicants respectfully submit that Claims 7, 8, 35, 36, 48-51, 54, and 55 are not properly rejected based on the ground and art of record.

II. Whether Claims 7, 35, 36, 48-51, 54, and 55 are unpatentable under 35 U.S.C. § 102(b) as being anticipated by U.S. Patent No. 4,105,076 to Simmons et al.

"A claim is anticipated if only each and every limitation as set forth in the claim is found, either expressly or inherently described, in a single prior art reference." *Verdegaal Bros. v. Union Oil Co. of California*, 814 F.2d 628, 631, 2 U.S.P.Q.2d 1051, 1053 (Fed. Cir. 1987). In addition, "the identical invention must be shown in as complete detail as is contained in the claim." *Richardson v. Suzuki Motor Co.*, 868 F.2d 1226, 9 U.S.P.Q.2d 1913, 1920 (Fed. Cir. 1989). All words in a claim must be considered in judging patentability of the claim against the prior art. *In re Fine*, 873 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988); *In re Wilson*, 424 F.2d 1382, 165 U.S.P.Q. 494 (CCPA 1970).

Applicants respectfully submit that the Examiner has failed to establish that Claims 7, 35, 36, 48-51, 54, and 55 are anticipated by Simmons et al. Applicants respectfully urge that Simmons et al. do not disclose or suggest the claimed combinations.

For example, with reference to Claim 35 Claim 35 calls for:

A concealed sprinkler head comprising:  
a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;  
a deflector movably mounted to said sprinkler body;  
a sealing assembly for sealing said outlet;  
a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;

a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and

a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

Applicants respectfully urge that Simmons et al. do not disclose or suggest a concealed sprinkler head cover plate with an outer surface having planar portions and other portions of the cover plate projecting outwardly away from the housing along the central axis of the sprinkler head body wherein the other portions form passageways that extend radially inward from the periphery to enable air to travel from the periphery of the cover plate inwardly to the thermally sensitive trigger assembly. In contrast, Simmons et al. discloses a cover plate with a flat or planar outer surface with no portions of the cover plate projecting outwardly away from the housing, as required by the claim.

In contrast, Simmons et al. discloses a cover plate with an inwardly extending rim with a series of tabs (44) that abut the ceiling. Therefore, Applicants respectfully urge that the Examiner has failed to establish that Simmons et al. anticipate the claimed invention.

Claims 7 and 8 are dependent upon Claim 35 and are considered allowed by virtue of their dependency on Claim 35.

Claim 36 is dependent upon Claim 35 and is similarly considered allowable by its virtue of its dependency. In addition, Claim 36 is further considered allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. Simmons et al. do not, for example, disclose or suggest a cover plate with an annular perimeter portion comprising an undulating outer surface forming a plurality of radially

spaced undulations, with the undulations forming the passageway sections. Therefore, Applicants respectfully urge that Claim 36 is, further, patentably distinguishable over Simmons et al.

Claim 51 is dependent upon Claim 36 and is considered allowable by virtue of its dependency on Claim 36 and its ultimate dependency on Claim 35. In addition, Claim 51 is considered allowable on its own merits and recites additional features of the invention neither taught nor suggest by Simmons et al. Simmons et al., for example, do not disclose or suggest the cover plate comprising generally planar portions extending between the passageway sections. Accordingly, Applicant respectfully urges that Claim 51 is further distinguishable and patentable over Simmons et al.

With respect to Claim 54, Claim 54 is dependent upon Claim 35 and is considered to be allowable by virtue of its dependency upon Claim 35. In addition, Claim 54 calls for the other portions to comprise arcuate portions. Simmons et al. do not disclose or suggest a cover plate including arcuate portions, with the arcuate portions forming passageway sections that extend inwardly from the periphery of the cover plate. Therefore, Applicants respectfully urge that Claim 54 is further patentably distinguishable over Simmons et al.

With respect to Claim 55, Claim 55 calls for:

A concealed sprinkler head comprising:  
a sprinkler head body having an outlet opening and  
a central axis, said outlet opening disposed about said central axis;  
a housing mounted to said sprinkler head body and  
having a central passageway in communication with said outlet  
opening;  
a thermally sensitive trigger assembly operative to  
open and close said outlet opening; and  
a cover plate mounted to said housing, said cover  
plate having a generally planar central portion, a perimeter portion  
extending around said planar central portion, and a peripheral edge  
extending around said perimeter portion, said cover plate further  
including an inner surface facing said housing and an outer

surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.

Applicants respectfully urge that Simmons et al. do not disclose or suggest, for example, a concealed sprinkler head that includes a cover plate having a generally planar central portion, a perimeter portion extending around the planar portion, and a peripheral edge extending around the perimeter portion, with the perimeter portion having a plurality of radially spaced arcuate portions extending between the central portion and the peripheral edge of the cover plate, which project outwardly from the plane of the cover plate to form a plurality of radially spaced passageways that extend inwardly from the peripheral edge to enable air to travel from the peripheral edge to the thermally sensitive trigger assembly. As noted above, in order to establish anticipation of a claim, each and every limitation of the claim must be either inherently or expressly disclosed in a single prior art reference. Moreover, all words in a claim must be considered in judging patentability of a claim against the prior art. *In re Fine*, 873 F.2d 1071, 5 U.S.P.Q.2d 1596 (Fed. Cir. 1988). Therefore, Applicants respectfully urge that Claim 55 is patentably distinguishable over Simmons et al.

Claim 48 is dependent upon Claim 55 and is considered allowable by virtue of its dependency on Claim 55. In addition, Claim 48 is considered to be allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. For example, Claim 48 further calls for the cover plate to include an undulating surface, which undulating surface defines the plurality of radially spaced arcuate portions. Simmons et al. do not disclose or suggest a concealed sprinkler head cover plate with an undulating surface that defines radially spaced arcuate portions that define radially spaced passageways

that extend inwardly from the peripheral edge to enable air to travel from the peripheral edge of the cover plate toward the thermally sensitive trigger assembly. In contrast, Simmons et al. discloses a planar cover plate with an inwardly extending rim with spaced rectangular tabs for bearing against the ceiling in which the concealed sprinkler is positioned. Therefore, Applicants respectfully urge that Claim 48 is patentably distinguishable over Simmons et al.

Claim 49 is considered allowable by virtue of its dependency upon Claim 55. In addition, Claim 49 is considered allowable on its own merits since it recites further features of the invention neither taught nor suggest by the Simmons et al. reference. For example, Claim 49 calls for a plurality of radially spaced generally planar portions that extend inwardly from the perimeter [peripheral] edge of the cover plate and are disposed between the radially spaced arcuate portions. Applicants respectfully urge that this feature is neither taught nor suggested by Simmons et al. As noted above, Simmons et al. is directed to a planar cover plate—moreover, a cover plate without any arcuate portions that define passageways extending inwardly from the peripheral edge to enable air to travel from the peripheral edge toward the thermally sensitive trigger assembly of the concealed sprinkler.

Claim 50 is considered allowable by virtue of its dependency on Claim 49 and its ultimate dependency upon Claim 55. In addition, Claim 50 is further considered allowable on its own merits since it recites other features of the invention neither taught nor suggested by the applied reference. For example, Claim 50 further calls for the planar portions to extend inwardly from the peripheral edge of the cover plate to a central planar portion. Applicants respectfully urge that Simmons et al. do not disclose or suggest a cover plate with planar portions disposed between radially spaced arcuate portions that extend between a central planar portion and a peripheral edge of the cover plate, as required by the claim. Therefore, Applicants urge that Claim 50 is further patentably distinguishable over Simmons et al.

Claim 51 is dependent upon Claim 36 and is considered to be allowable by virtue of its dependency on Claim 36. In addition, Claim 51 is considered to be allowable on its own merits since it recites other features of the invention neither taught nor suggested by Simmons et al. For example, Simmons et al. do not disclose generally planar portions extending between passageway sections, which are formed by a plurality of radially spaced undulations that project outwardly away from a concealed sprinkler housing. Therefore, Applicants respectfully urge that Claim 51 is further patentably distinguishable over Simmons et al.

With respect to Claim 54, Claim 54 is dependent upon Claim 35 and is considered to be allowable by virtue of its dependency upon Claim 35. In addition, Claim 54 is further considered to be allowable on its own merits since it recites other features not taught nor suggested by Simmons et al. Claim 54 further calls for the other portions to comprise arcuate portions. As noted above, Applicants respectfully urge that Simmons et al. do not disclose or suggest a cover plate with arcuate portions that form passageways that extend from the periphery of the cover plate inwardly and project outwardly away from the concealed sprinkler head housing.

III. Whether Claim 8 is unpatentable over 35 U.S.C. § 103(a)  
as being obvious over U.S. Patent No. 4,105,076 to Simmons et al.

To establish a prima facie case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation either in the references themselves or in the knowledge generally available to one of ordinary skill in the art to modify the reference or combine the reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference or references when combined must teach or suggest all the claimed limitations. The teaching or suggestion to make the claim combination and reasonable expectation of success must both be found in the prior art and



not based on Applicants' disclosure. *In re Vaack*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991). See also MPEP § 2143.

Claim 8 is dependent upon Claim 7 and ultimately dependent upon Claim 55 and, thus, incorporates the same limitations as Claims 7 and 55. Claim 8 is considered to be allowable by virtue of its dependency to Claim 55; therefore, Applicants respectfully urge that Claim 8 is patentably distinguishable over Simmons et al. for at least the reasons set forth above in reference to Claim 55.

9. Conclusion:


For the reasons advanced above, Applicants respectfully contend that the finality of the Office Action dated October 17, 2003 was improper and, further, that each of the appealed claims is patentable over the Simmons et al. reference. Therefore, reversal of all rejections of the appealed claims is respectfully solicited. To the extent necessary, a Petition for an Extension of Time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in the fees in connection with the filing of this paper, including for example extension fees, to Deposit Account No. 22-0190 and please credit any excess fees to such deposit account.

Respectfully submitted,

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April 19, 2004  
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## APPENDIX A - REJECTED CLAIMS

Claims 7, 8, 35, 36, 48-51, 54, and 55.

7. (previously presented) The concealed sprinkler head of claim 55, further comprising a spring positioned between said inner surface and said housing, said spring configured to thrust said cover plate away from said housing.

8. (Original) The concealed sprinkler head of claim 7, wherein said spring further comprises a first substantially linear section and a second substantially linear section joined by an arcuate section.

35. (previously presented: A concealed sprinkler head comprising:

- a sprinkler body having a central axis and central orifice disposed about said central axis, said central orifice defining an inlet and an outlet, said inlet configured for attachment to a fire extinguishing fluid supply line;

- a deflector movably mounted to said sprinkler body;

- a sealing assembly for sealing said outlet;

- a thermally sensitive trigger assembly configured to releasably urge said sealing assembly into sealing engagement with said outlet;

- a housing attached to said sprinkler body and having a bottom extending beyond said outlet, said thermally sensitive trigger assembly positioned between said outlet and said bottom of said housing; and

- a cover plate removably mounted to said bottom of said housing, said cover plate having an inner surface facing said housing, an outer surface having planar portions, and a periphery, other portions of said plate projecting outwardly in a direction generally along said central axis away from said housing, said other portions forming passageway sections extending inwardly from said periphery to enable air to travel between said periphery and said bottom of said housing and towards said thermally sensitive trigger assembly.

36. (previously presented) The concealed sprinkler head of claim 35, wherein said cover plate has an annular perimeter portion comprising an undulating outer surface forming a plurality of radially spaced undulations, and said undulations forming said passageway sections.

48. (previously presented) The concealed sprinkler head according to Claim 55, wherein said cover plate has an undulating surface, said undulating surface defining said plurality of radially spaced arcuate portions.

49. (previously presented) The concealed sprinkler head according to Claim 55, further comprising a plurality of radially spaced generally planar portions extending inwardly from said perimeter edge and disposed between said radially spaced arcuate portions.

50. (previously presented) The concealed sprinkler head according to Claim 49, wherein said planar portions extend inwardly from said peripheral edge to said central planar portion.

51. (previously presented) The concealed sprinkler head according to Claim 36, further comprising generally planar portions extending between said passageway sections.

54. (previously presented) The concealed sprinkler head according to Claim 35, wherein said other portions comprise arcuate portions.

55. (previously presented) A concealed sprinkler head comprising:

- a sprinkler head body having an outlet opening and a central axis, said outlet opening disposed about said central axis;

- a housing mounted to said sprinkler head body and having a central passageway in communication with said outlet opening;

- a thermally sensitive trigger assembly operative to open and close said outlet opening; and

- a cover plate mounted to said housing, said cover plate having a generally planar central portion, a perimeter portion extending around said planar central portion, and a peripheral edge extending around said perimeter portion, said cover plate further including an inner surface facing said housing and an outer surface, said planar central portion lying in a plane generally orthogonal to said central axis, said perimeter portion having a plurality of radially spaced arcuate portions extending between said central portion and said peripheral edge, said arcuate portions projecting outwardly from said plane to form a plurality radially

spaced passageways extending inwardly from said peripheral edge to enable air to travel from said peripheral edge toward said thermally sensitive trigger assembly.